PART 2

THE SITE

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PART 2

THE SITE

2.1 Location of the Sites

Project area is located in the Core area of Bruhath Bangalore Mahanagara Palike. The Project area of sewage treatment plant is located at the Hennur main road, Geddalahalli near Amani Byrtahikere village. The geographical location of the STP site is 77° 64' 47" E Latitude and 13° 2' 36" N Longitude. The proposed site for the upgradation of 40 MLD Capacity Sewage treatment plant, which is approximately 15 km from the Bangalore city Railway station in the state of Karnataka, India.

BWSSB has constructed 40 MLD capacity STP based on Extended Aeration process technology at Rajacanal under CWSS Stage IV Phase I to treat flows received at Raja canal catchment area. The TSPS of capacity 40MLD has been constructed at Raja Canal to pump sewage of 40MLD to inlet of Rajacanal STP under CWSS Stage IV Phase I Project.

The Google Map showing the location of existing Phase-I 40MLD capacity STP with TSPS along with Phase-II 40MLD capacity STP within the same premises with outlet from CCT to nearby drain is indicated in Figure 2.1 is as presented below.

New 40MLD STP at Rajacanal
Old 40MLD STP Rajacanal
40MLD TSPS to old STP
20/40-ISPS/TSPS to Horamavu and Rajacanal new STP
Outlet from old STP to drain
Google Earth
200 m
N

Figure 2.1: **The Google Map showing the location of Project Area of 40MLD Phase-I STP at Rajacanal**

The total land available in the existing premises at Rajacanal is about 22 acres, out of which Phase-I STP occupied an area of 9.6 acres. The treated effluent from the plant is collected in treated sewage outfall chamber from where the Minor irrigation department is tapping and pumping to Chikkaballapura.

2.2 Access to the Sites

The Employer will allow Contractor access to and possession of the Site for carrying out the Works. The Contractor shall be deemed to have inspected the STP and ISPS, sites including access and pumping main alignment before submitting his Bid.

The Contractor shall ensure that all the plant & other components offered are of a size and weight or can be divided into sections of a size and weight suitable for access to the place of installation.

The Contractor shall ensure that equipment used for installation purposes shall be able to gain access and position for such purposes.

2.2.1 Rajacanal Phase-I STP

The new plant is to be constructed within the STP premises for which approach is available from 5m wide road. This road is suitable for heavy goods vehicles. The total area of Rajacanal premises is about 22 acres; The 40MLD Phase-I STP premises covers an area of 9.6 acres. The Plant was commissioned in the year 2004.

The effluent from both Rajacanal phase-I STP is being used for the irrigation in Chikabanapur village and is pumped to the HN valley indirect tank recharge project.

The total area required for the proposed 40 MLD STP with proposed Disc filter sump cum pump house and Scrubber unit shall be arrived by bidder. If the area requirement exceeds the available open area then innovative and feasible approach shall be proposed by Contractor/Bidder to fit the new facilities suitably in existing available area with due consideration of proper O&M, health and safety requirement and other standards.

Figure 2.2: **Google image showing the proposed modification and new units under up-gradation as shown below.**

Figure 2.2: Google image showing the proposed modification and new units under up-gradation

Figure 2.3: Image showing the Plant Layout of Existing 40MLD Rajacanal Phase-I

2.3 Maintenance of the Site

The Contractor shall be responsible for maintaining all the site structures, buildings, equipment, contract display board and related services until expiration of the Contract period or until such time as the aforementioned facilities are removed with the Engineer's prior approval, whichever is earlier.

At proposed STP site under the contract, access to main gate and access road extension shall be provided by the Contractor.

2.4 Areas outside the Site

In the event of the Contractor making use of any special or temporary way leave or accommodation acquired by him or any pit for the disposal of surplus materials, or any borrow pit or quarry, he shall obtain the written consent of the owner, occupier or authority having charge of the land in which such way leave, accommodation, or pit is situated and shall make a written record, acknowledged and signed by the owner, of the condition of the surface of that land before entering thereon, with liberal use of photographs.

The Contractor shall permit the Employer and the Engineer and any person authorised by the Employer access for the purposes of the Contract to any such special or temporary way leave or additional accommodation.

In the event of the Contractor making use of any special or temporary way leave or additional accommodation made available to him by the Employer for the purpose of the Contract, the land in

which such way leave or accommodation is situated shall be deemed to be part of the Site. On completion of the works in this area, the Contractor shall reinstate the area to its original condition to the satisfaction of the Engineer. For the purposes of this Clause, "accommodation" shall be deemed to include housing, offices, workshops, warehouses, and storage areas.

2.5 Road Works

The Contractor shall obtain all permits required for carrying out works such as excavation on public roads and shall liaise with the appropriate authorities with regard to the timing and execution of the road works.

The Contractor shall be responsible for establishing and maintaining temporary road diversions for the duration of the road works. The road shall be kept open at all times during the road works period, and the work shall be carried out in such a manner as to minimise the disruption to traffic. The Contractor shall reinstate all the roads to the satisfaction of the Engineer after completion of works.

2.6 Maintenance of Existing Access Roads

The Contractor shall only use existing access roads within the Site boundary which are necessary for the execution of the Works. The Contractor shall obtain the Engineer's approval in writing before utilising existing access roads within the Site. Once the Engineer's approval has been given the Contractor shall be solely responsible for the maintenance of the existing site access roads. This responsibility shall continue until the completion of the Defects Notification Period, or until such earlier date as the Engineer may advise the Contractor in writing. Such maintenance work shall include general up-keep and any necessary repairs to damaged road surfaces, pavement, drainage, associated slopes, etc. to a standard at least equal to their original condition. While carrying out such maintenance work, the Contractor shall make arrangements to maintain through passage for the Employer's and his staff's vehicles and also those of other contractors over these access roads. Such arrangements may comprise temporary diversions, all to the approval and satisfaction of the Engineer.

The Contractor shall not run tracked or unsprung mass of vehicles on surfaced roads without the written approval of the Engineer who may require that planking or some other protective material be used to protect the road surface.

2.7 Clearance of the Site

The Contractor shall clear the Site to the extent required by the Engineer for checking the setting-out.

Clearance of the Site shall also include demolition and removal of all articles, objects and obstructions which are expressly required to be cleared.

The Contractor shall ensure that the parts of the Site to be occupied by the Permanent Works are clear, and shall maintain the remainder of the Site as may be required for access and temporary works areas.

The Contractor shall remove the material arising from such clearance and dispose of it in a manner and at a location that are both in compliance with all applicable laws and regulations.

The Contractor shall backfill with appropriate specified materials and procedures those cavities and losses of soil which result from clearing the parts of the Site not subsequently to be occupied by the Works.

The Contractor shall not clear the Site of any existing structure(s) without the prior written instruction of the Engineer.

2.8 Clearance and Reinstatement of the Site on Completion of the Works

On completion of the Works, the Contractor shall clear any temporary works areas and temporary access roads and reinstate the areas to their original condition and to the satisfaction of the Engineer.

2.9 Access for the Employer and Engineer

The Contractor shall permit the Employer and the Engineer and any person authorised by the Employer or the Engineer including workmen of the Employer, other Contractors or utility undertakings access for the purposes of the Contract to all areas of the Site and to any additional accommodation or temporary way leave for the duration of the Contract period.

2.10 Water Supply at Site

The Contractor shall make his own arrangements for water supply at the site for the duration of the contract. The Contractor shall ensure the quality of the water remains suitable for the purpose for which it is intended. The Contractor shall also conduct weekly test for water quality and comply with the quality requirements. Wastewater shall be disposed of clear of the Site to the satisfaction of the Engineer so as to maintain the hygienic condition at the site and no damage or complaint.

Bore wells shall be drilled to meet the water requirements for Human use, Chemical dosing preparation, Laboratory use, OHT filling for blower. Each Bore well is provided with a 20 m^3/hr of submersible pumps to pump the water required for specific use. Contractor shall take prior approval for source of water used for constructional activities and such source of water shall not be a groundwater or water designated as drinking purpose.

2.11 Toilets, Latrines, Washing Facilities, and Wastewater Disposal

Throughout the period of construction of the Works the Contractor shall provide, maintain, and cleanse suitable and sufficient toilets, latrines and washing facilities for use by his employees. He shall ensure that his employees do not foul the Site but make proper use of the latrines.

Where practicable all wastewater generating facilities on site shall be connected to the nearest public sewer or if this is not practicable the Contractor shall provide an adequately sized septic tank and soak pit.

After completion of the works, the temporary toilets, latrines, washing facilities, septic tanks, and soak pits shall be removed, all ground disinfected and the surface restored to its original condition to the satisfaction of the Engineer.

2.12 Electricity for Contractor's Use on Site

The Contractor shall be responsible for provision of an electric supply to the site, energy meter, and distribution of the supply in accordance with the Conditions of Contract (including Particular Conditions of Contract).

The installation shall comply with all the relevant regulations, Indian Standards and Codes of Practice, and Health and Safety requirements. The Contractor shall take all precautions to ensure that the installation is safe and injury to personnel or damage to plant and buildings is avoided. The Contractor shall be fully responsible for all safety aspects.

The Contractor shall test the temporary site power distribution system including energy meter every 3 months for compliance with the relevant standards.

2.13 Camp Facilities

The Contractor shall construct and maintain to the Engineer’s satisfaction a camp to provide living accommodation for all Contractors staff and operatives who have no other local accommodation. The Contractor's camp shall be located close to but not on the Site itself and at a location approved by the Engineer.

Responsibility for providing all services to the living quarters and compliance with all sanitary laws and other laws and regulations shall be borne by the Contractor. Security and the fencing of these areas shall be the responsibility of the Contractor.

Contractor is responsible for arranging space for storing of construction materials and Labour camps.

2.14 Compressed Air Use on Site

The Contractor shall provide the necessary compressed air plant and equipment required for construction of the Works.

Electrically driven compressors connected to the site electricity supply shall not be used. Diesel engine driven compressors shall not be sited within buildings or in a location that may cause a health hazard to personnel owing to exhaust fumes or noise.

2.15 Refuse Disposal on Site

Refuse and rubbish of every kind shall be removed from the Site and disposed of by the Contractor at his own expense, frequently and regularly at a minimum period of one week so as to keep the Site in a wholesome and tidy condition to the satisfaction of the Engineer.

2.16 Safety and Security on Site

Safety and Security is most important aspect of Works contract. Contractor shall be fully responsible for safety and security on site.

The Contractor shall at all times maintain safe work methods and procedures and shall comply with all enactments, regulations and working rules relating to safety, security, health and welfare of all persons who may be affected by his work.

In particular he shall ensure that only persons who are properly trained for their duties are employed, and that appropriate, approved tools, safety equipment, and procedures are used.

Nothing which has been written into or omitted from the Employer's Requirements shall be taken to relieve the Contractor from his obligations under this clause. No clause in the Employer's Requirements shall prevent the Contractor from drawing the attention of the Engineer to any feature of the Works which is not consistent with normal safety practices nor prevent him from putting forward proposals at any time which would increase the safety of the installations.

Not later than four weeks before work commences on the Site, the Contractor shall submit to the Engineer his comprehensive plans and proposals relating to the all aspects of health and safety on the Site. The proposals shall be appropriate for all grades of labour and personnel who will work on or visit the Site on behalf of the Employer, Engineer or Contractor.

The Contractor shall appoint a suitably qualified Health & Safety Engineers (Accident Prevention Officers)), as stated in Volume 1, Section III of Evaluation and Qualification Criteria who shall be responsible for the implementation of site procedures as per relevant standards. The responsibilities of the above engineers shall include but not be limited to:

- safety;
- working in hazardous areas;
- permit to work;
- fire and smoking regulations;
- first aid;
- warning signs;
- trenching scaffolding and other construction structures;
- safety barriers;
- protective clothing and equipment;
- safety training;
- safety meetings and inspections;
- health and welfare.

The Engineer shall have the power to stop any activity or work in any area where there is a breach of the published site safety rules or health and safety is otherwise endangered.

The Contractor shall ensure that all other Contractors working on the Site also follow established health and safety procedures. T he Contractor shall bring any violation of Site safety rules by others to the attention of the Engineer in writing.

2.17 First Aid and Life-saving Apparatus on Site

The Contractor shall provide on the Site such life-saving apparatus as may be appropriate and an adequate and easily accessible to workmen and all other Staff a first aid outfit/station or such

outfits/station as may be required in any government ordinances, factories acts, etc, published and subsequently amended from time to time. Each station shall be properly equipped and shall be under the charge of a suitably qualified and trained staff member. In addition, an adequate number of persons permanently on the Site shall be instructed in their use, and the persons so designated shall be made known to all employees by the posting of their names and designations in a prominent position (positions) on Site.

The Contractor shall arrange for medical services to be promptly available when necessaryand shall also provide for transport of serious cases to the nearest hospital. These and all other arrangements shall be included in the Contractor's Safety Plan.

2.18 Electrical Safety on Site

The Contractor shall be responsible for the electrical safety of all Plant and equipment supplied and installed. Whilst any equipment is being installed or tested, the Contractor shall ensure that all necessary precautions are taken to safeguard personnel working on site. If necessary, this shall include fencing off areas which are considered to pose a risk, and erecting warning notices.

The Contractor shall be responsible for ensuring that the electrical installation is carried out by suitably trained competent personnel and that the work is carried out in a safe manner.

The Contractor shall be responsible for the operation on the Site of a permit to work system during the period of electrical equipment installation and testing. This system shall regulate the installation, the energisation and the use of electrical Plant and equipment installed and the method of work adopted.

2.19 Noise

The Contractor shall ensure that the operations entailed in the construction of the Works do not cause annoyance to others working on the Site or to persons living adjacent to the Site.

2.20 Warning and Safety Signs

During construction of the Works statutory safety signs shall be adequately provided throughout the Works, both indoors and outdoors. These safety signs shall cover mandatory, prohibition, warning, emergency, fire-fighting and general notices. All signs shall be positioned around the Works at highly visible points. Provision of signs and the positions of signs shall be subject to the Engineers approval. Special attention shall be given to areas designated hazardous.

Warning signs shall be in English, Kannada and Hindi Languages.

2.21 Site Working Hours

The Site working hours are detailed in the Contract Data.

The Contractor shall not extend the working hours without the prior approval of the Engineer.

2.22 Delivery to Site

The Contractor shall be responsible for the transporting, handling, and delivery to site of all the Plant and equipment. The proper storage and protection of all Plant and equipment at the Site shall be the Contractor's responsibility.

The Contractor shall check all items against packing lists immediately on delivery to the Site and shall also inspect for damage and shortages. Damages and shortages shall be remedied with the minimum of delay.

The Contractor may, with the prior approval of the Engineer and at no extra cost to the Employer, make arrangements for any other contractor or agent to take delivery of, unload and store the Plant on the Site on behalf of the Contractor.

All deliveries shall take place during the Contractor's normal working hours.

2.23 Protection from Weather and Storage

An area and/or building on the Site for use by the Contractor for storage of Plant prior to erection will be subject to the approval of the Engineer.

The Contractor shall provide all facilities for the safe and proper storage of Plant and equipment, as recommended by the manufacturers, with particular consideration being given to temperature, rain, sunlight, wind and ground conditions.

The Contractor shall remain responsible to the Employer for the care and insurance of the Plant and the provisions of this Clause shall not relieve the Contractor of any of his liabilities under the Contract.

Stored Plant items shall be laid out by the Contractor to facilitate their retrieval for use in the required order as recommended by the manufacturer.

Stacked Plant items shall be protected from damage by spacers on load distributing supports and shall be safely arranged. No metalwork shall be stored directly on the ground.

Small Plant items shall be held in suitable bins, boxes or racks and be clearly labelled.

Items of Plant shall be handled and stored so that they are not subjected to excessive stresses and so that protective coatings are not damaged.

The Contractor shall comply with the manufacturer's package and plant markings concerning the use and location of lifting slings, chains and hooks, and all other handling, storage, protection, and installation instructions.

2.24 Datum Benchmark

The site coordinates are as follows:

For STP:
Easting 77°64'47"E

Northing 13° 2'36"N
RL (approximate) is 839m
The values indicated are approximate. The established Bench mark at 40 MLD Rajacanal STP shall be verified/ confirmed with nearest GTS Bench Mark and shall be used for STP.

2.25 Contract Signboards

The Contractor shall supply and erect signboards at locations to be specified by the Engineer. The layout and dimensions of the signboards and their construction shall be to the approval of the Engineer and the lettering in Kannada, Hindi and English Languages shall be black on a white background.

2.26 Advertising

The Contractor shall not use any part of the Site for any form of advertising without the prior written approval of the Engineer.

End of Part 2